Amendments to the Claims

Applicants respectfully request that the claims in the subject patent application be amended as follows. This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

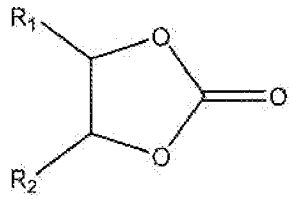
Claims 1-3. (Cancelled)

Claim 4. (Currently amended) The process of claim ~~1~~ 6 wherein the Mannich condensation product of an alkylphenol is a Group II metal salt.

Claim 5. (Cancelled)

Claim 6. (Currently amended) ~~The~~ A process ~~of claim 1~~ for preparing Group II metal carbonated, overbased Mannich condensation products of alkylphenols which comprises:

forming a reaction mixture by combining a Mannich condensation product of an alkylphenol wherein the alkyl group contains a sufficient number of carbon atoms to render oil-soluble the resulting Group II metal carbonated, overbased Mannich condensation products of alkylphenol, a Group II metal oxide, hydroxide or C_1-C_6 alkoxide, one or more promoters, and an alkylene carbonate selected from ethylene carbonate or a mono-alkyl or di-alkyl substituted ethylene carbonate, said alkylene carbonate having the following structure:



wherein R_1 and R_2 are independently hydrogen or alkyl containing one to three carbon atoms; and wherein the combining is carried out for a time and at a temperature sufficient to form in situ carbon dioxide and alkylene glycol, to form a product comprising a Group II metal carbonated, overbased Mannich condensation product of an alkylphenol, wherein the promoter comprises a C_2-C_{10} alkylene glycol, and a second promoter, which is different from the first promoter, comprises water, a C_1-C_5 mono- or di-alcohol, ethylene glycol or a mixture thereof, and wherein the alkylene carbonate is added to the reaction mixture over a time period of about 15 minutes to about 120 minutes.

Claim 7. (Currently amended) The process of claim ~~1~~ 6 wherein one of R_1 and R_2 is hydrogen and the other is hydrogen or methyl.

Claim 8. (Currently amended) The process of claim ~~1~~ 6 wherein the alkylene carbonate is ethylene carbonate.

Claims 9-10. (Cancelled)

Claim 11. (Currently amended) The process of claim ~~1~~ 6 further comprises recovering the product by filtering the reaction mixture to remove sediment.

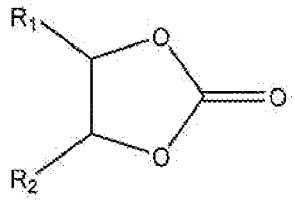
Claim 12. (Cancelled)

Claim 13. (Currently amended) The process of claim ~~12~~ 14 wherein the Mannich condensation product of an alkylphenol is a Group II metal salt.

Claim 14. (Currently amended) ~~The~~ A ~~process of claim 12~~ for preparing Group II metal carbonated, overbased Mannich condensation products of alkylphenols which comprises the steps of:

(a) forming a reaction mixture by combining a Mannich condensation product of an alkylphenol wherein the alkyl group contains a sufficient number of carbon atoms to render oil-soluble the resulting Group II metal overbased Mannich alkylphenol, and one or more promoters, and a Group II metal oxide, hydroxide or C_1-C_6 alkoxide; and

(b) contacting said reaction mixture with an alkylene carbonate selected from ethylene carbonate or a mono-alkyl or di-alkyl substituted ethylene carbonate, said alkylene carbonate having the following structure:



wherein R_1 and R_2 are independently hydrogen or alkyl containing one to three carbon atoms; and wherein the contacting is carried out for a time and at a temperature

sufficient to form in situ carbon dioxide and alkylene glycol, to form a product comprising a Group II metal carbonated-overbased Mannich condensation product of an alkylphenol, wherein the promoter comprises a C_2-C_{10} alkylene glycol, and a second promoter, which is different from the first promoter, comprises water, a C_1-C_5 mono- or di-alcohol, ethylene glycol or a mixture thereof, and wherein in step (b) the alkylene carbonate is added to the reaction mixture over a time period of about 15 minutes to about 120 minutes.

Claim 15. (Original) The process of claim 14 wherein in step (b) the alkylene carbonate is added to the reaction mixture over a time period of about 30 minutes to about 90 minutes.

Claim 16. (Currently amended) The process of claim ~~12~~ 14 wherein in step (b) one of R_1 and R_2 is hydrogen and the other is hydrogen or methyl.

Claim 17. (Currently amended) The process of claim ~~12~~ 14 wherein in step (b) the alkylene carbonate is ethylene carbonate.

Claims 18-19. (Cancelled)

Claim 20. (Currently amended) The process of claim ~~12~~ 14 further comprising:

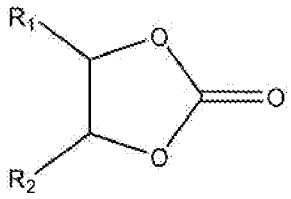
(c) recovering the product by filtering the reaction mixture of step (b) to remove sediment.

Claim 21. (Previously presented) A process for preparing Group II metal carbonated, overbased Mannich condensation products of alkylphenols which comprises the steps of:

(a) forming a first reaction mixture by combining an alkylphenol wherein the alkyl group contains a sufficient number of carbon atoms to render oil-soluble the resulting Group II metal carbonated, overbased Mannich condensation products of alkylphenol with an aldehyde and an amine, in the presence of an inert hydrocarbon diluent;

(b) contacting said first reaction mixture with a second reaction mixture comprising a Group II metal oxide, hydroxide or C_1-C_6 alkoxide, and a promoter to form a third reaction mixture; and

(c) contacting said third reaction mixture with an alkylene carbonate selected from ethylene carbonate or a mono-alkyl or di-alkyl substituted ethylene carbonate, said alkylene carbonate having the following structure:



wherein R_1 and R_2 are independently hydrogen or alkyl containing one to three carbon atoms; and wherein said contacting is carried out for a time and at a temperature sufficient to form in situ carbon dioxide and alkylene glycol to

form a product comprising a Group II metal carbonated, overbased Mannich condensation product of an alkylphenol.

Claim 22. (Original) The process of claim 21 wherein in step (c) the alkylene carbonate is added to the third reaction mixture over a time period of about 15 minutes to about 120 minutes.

Claim 23. (Original) The process of claim 22 wherein in step (c) the alkylene carbonate is added to the third reaction mixture over a time period of about 30 minutes to about 90 minutes.

Claim 24. (Original) The process of claim 21 wherein in step (c) one of R_1 and R_2 is hydrogen and the other is hydrogen or methyl.

Claim 25. (Original) The process of claim 21 wherein in step (c) the alkylene carbonate is ethylene carbonate.

Claim 26. (Original) The process of claim 21 wherein in step (b) the promoter is a C_2-C_{10} alkylene glycol.

Claim 27. (Original) The process of claim 21 wherein step (a) further comprises a promoter, wherein the promoter comprises water, a C_1-C_5 mono- or di-alcohol, ethylene glycol or a mixture thereof.

Claim 28. (Original) The process of claim 21 wherein in step (a) the amine is an aliphatic amine, an aromatic amine, a polyfunctional amine or mixtures thereof, containing at least one amino group characterized by the presence of at least one active hydrogen or methylene group, and wherein the amine contains only primary amino groups,

only secondary amino groups, or both primary and secondary amino groups.

Claim 29. (Original) The process of claim 28 wherein the aliphatic amine is an alkylene diamine, a dialkylamine, a polyalkylene polyamine or mixtures thereof.

Claim 30. (Original) The process of claim 29 wherein the aromatic amine is a single-ring aromatic amine, a double-ring aromatic amine or mixtures thereof.

Claim 31. (Original) The process of claim 21 wherein in step (a) the aldehyde is an aliphatic aldehyde, aromatic aldehyde, a heterocyclic aldehyde or mixtures thereof.

Claim 32. (Original) The process of claim 31 wherein the aliphatic aldehyde is formaldehyde or paraformaldehyde.

Claim 33. (Original) The process of claim 32 wherein the aromatic aldehyde is benzaldehyde.

Claim 34. (Original) The process of claim 32 wherein the heterocyclic aldehyde is furfural.

Claim 35. (Original) The process of claim 21 wherein the molar ratios of the alkylphenol, the aldehyde and the amine are from about 1:1.8:1 to about 1:3:1.

Claim 36. (Original) The process of claim 21 further comprising:

(d) recovering the product by filtering the third reaction mixture of step (c) to remove sediment.

Claim 37. (Original) The process of claim 21 wherein the alkyl group of the alkylphenol is a straight-chain alkyl group or branched-chain alkyl group containing at least 10 carbon atoms.

Claim 38. (Original) The process of claim 37 wherein the straight-chain alkyl group or the branched-chain alkyl group contains from about 12 carbon atoms to about 50 carbon atoms.

Claim 39. (Original) The process of claim 37 wherein the alkyl group of the alkylphenol contains from about 25 to about 100 mole percent straight-chain alkyl groups containing from about 15 to about 35 carbon atoms and from about 75 to about 0 mole percent branched-chain alkyl groups containing from about 9 to about 18 carbon atoms.

Claim 40. (Original) The process of claim 39 wherein the alkyl group of the alkylphenol contains from about 40 to about 70 mole percent straight-chain alkyl groups containing from about 15 to about 35 carbon atoms and from about 60 to about 30 mole percent branched-chain alkyl groups containing from about 9 to about 18 carbon atoms.

Claim 41. (Original) The process of claim 21 wherein the alkyl group of the alkylphenol is attached predominantly at the para position of the phenol ring.

Claim 42. (Original) The process of claim 41 wherein the alkylphenol containing the para attachment of the alkyl group is from about 70 to about 95 weight percent of the total alkylphenol.

Claim 43. (Original) The process of claim 21 wherein the Group II metal oxide, hydroxide or C_1-C_6 alkoxide is selected from the group consisting of calcium, barium, and magnesium oxide, hydroxide or C_1-C_6 alkoxide and mixtures thereof.

Claim 44. (Original) The process of claim 43 wherein the Group II metal oxide, hydroxide or C_1-C_6 alkoxide is calcium hydroxide.

Claim 45. (Currently amended) A product made by the process of claim ~~1~~ 6 wherein the CO_2 to Ca ratio of the product is in the range of about 0.01 to about 0.6.

Claim 46. (Currently amended) A product made by the process of claim ~~13~~ 14 wherein the CO_2 to Ca ratio of the product is in the range of about 0.01 to about 0.6.

Claim 47. (Original) A product made by the process of claim 21 wherein the CO_2 to Ca ratio of the product is in the range of about 0.01 to about 0.6.

Claims 48-57. (Cancelled)